UNITED STATES BANKRUPTCY COURT

SOUTHERN DISTRICT OF NEW YORK

In re:	Chapter 11
PURDUE PHARMA L.P., *et al*.,	Case No. 19-23649 (RDD)
Debtors.[1]	(Jointly Administered)

EXPERT REPORT OF DAVID W. DERAMUS, PHD

June 15, 2021

[1] The Debtors in these cases, along with the last four digits of each Debtor's registration number in the applicable jurisdiction, are as follows: Purdue Pharma L.P. (7484), Purdue Pharma Inc. (7486), Purdue Transdermal Technologies L.P. (1868), Purdue Pharma Manufacturing L.P. (3821), Purdue Pharmaceuticals L.P. (0034), Imbrium Therapeutics L.P. (8810), Adlon Therapeutics L.P. (6745), Greenfield BioVentures L.P. (6150), Seven Seas Hill Corp. (4591), Ophir Green Corp. (4594), Purdue Pharma of Puerto Rico (3925), Avrio Health L.P. (4140), Purdue Pharmaceutical Products L.P. (3902), Purdue Neuroscience Company (4712), Nayatt Cove Lifescience Inc. (7805), Button Land L.P. (7502), Rhodes Associates L.P. (N/A), Paul Land Inc. (7425), Quidnick Land L.P. (7584), Rhodes Pharmaceuticals L.P. (6166), Rhodes Technologies (7143), UDF LP (0495), SVC Pharma LP (5717) and SVC Pharma Inc. (4014). The Debtors' corporate headquarters is located at One Stamford Forum, 201 Tresser Boulevard, Stamford, CT 06901.

Table of contents

List of figures

I. Summary of qualifications and experience

(1) My name is David W. DeRamus. I have a Ph.D. in Economics from the University of Massachusetts at Amherst, and I am a co-founder and Partner with Bates White Economic Consulting since 1999.

(2) I have served as a testifying and consulting economic expert on a wide range of litigation and non-litigation matters, including matters related to transfer pricing, international arbitration, contract disputes (including disputes related to royalties and pricing), antitrust disputes, mergers and acquisitions, intellectual property disputes, and a variety of proceedings related to the energy industry. Prior to Bates White, from 1998 to 1999, I was employed by the management consulting firm of A.T. Kearney. Prior to that, I was with the accounting firm of KPMG Peat Marwick.

(3) I have performed transfer pricing analyses since 1993 for a wide range of clients, in support of U.S. and foreign tax compliance, planning, audits, Advanced Pricing Agreements, litigation, and other dispute proceedings. I have worked both on behalf of corporate clients and on behalf of the U.S. federal and certain state governments. My transfer pricing work has included evaluating the pricing and transfers of tangible goods, tangible assets, intangible assets, and services. I have prepared transfer pricing analyses related to the pharmaceutical industry. I also have provided consulting services regarding drug pricing, licensing strategies, royalty analysis, and competition related to the pharmaceutical industry.

(4) My curriculum vitae is attached hereto as B.4.

II. Assignment

(5) On September 15, 2019 (the "Petition Date"), each of Purdue Pharma L.P. ("Purdue Pharma" or "PPLP"), its general partner Purdue Pharma Inc. ("PPI"), and Purdue Pharma's wholly owned direct and indirect subsidiaries (collectively, the "Debtors" or the "Debtor Group") filed a voluntary petition for relief under chapter 11 of title 11 of the United States Code (the "Bankruptcy Code") in the United States Bankruptcy Court for the Southern District of New York (the "Bankruptcy Court"). The Debtors' chapter 11 cases are being jointly administered under the caption *In re Purdue Pharma L.P.*, Case No. 19-23649 (the "Chapter 11 Cases"). The Debtors have continued in possession of their property and have continued to operate and manage their businesses as debtors in possession pursuant to sections 1107(a) and 1108 of the Bankruptcy Code. No trustee or examiner has been appointed in these Chapter 11 Cases.[2]

[2] In re: Purdue Pharma L.P., *et al*., Debtors, Chapter 11 Case No. 19-23649 (RDD) (Bankr. S.D. N.Y. June 3, 2021),

(6) I was asked by Davis Polk & Wardwell LLP, Counsel to the Debtors in the above-captioned Chapter 11 Cases, to value the intercompany transfers between Purdue Pharma and the Independent Associated Companies ("IACs") and other Sackler-owned entities. As part of this charge, I was asked to evaluate whether Purdue Pharma received arm's-length value for the intercompany and non-cash transfers identified by AlixPartners and described in Mark Rule's Expert Report of June 15, 2021 ("Rule Report"). The identified transactions and transfers assessed were between Purdue Pharma (including Debtor entities) and (1) the IACs; and (2) Purdue Pharma's parent entities. There were also transactions and transfers between Purdue Pharma and other Debtor entities, such as Rhodes Technologies ("Rhodes Tech") and Rhodes Pharmaceuticals L.P. ("Rhodes Pharma" and collectively "Rhodes").[3]

(7) For transactions and transfers where I conclude that Purdue Pharma (or the Debtor) did not receive arm's-length value, I was asked to estimate the deficient amount received, or excess amount provided, by Purdue Pharma relative to the actual amount (if any) of the transfers from or to the IACs or Purdue Pharma's parent entities.[4] The transactions and transfers analyzed occurred between January 1, 2008 and the Petition Date.

(8) The analyses and opinions in this report are based on the results of my research, my review and analysis of the materials provided to me, my education and training, and my experience as a professional in transfer pricing and as a consultant on related topics.

(9) My team, under my direction, reviewed numerous documents and materials provided by Purdue Pharma, the IACs, and other Sackler-owned entities. These materials include audited financial statements, other financial statements, intercompany licensing agreements, service agreements, manufacturing supply agreements, Board meeting minutes and presentations, and various other business documents. In addition, I also relied upon publicly and commercially available databases containing third party licensing agreements, financial data, publicly available financial filings, industry reports, news releases, articles, and other public documents. Appendix B lists the materials I considered in forming my opinion.

Disclosure Statement for Fifth Amended Joint Chapter 11 Plan of Reorganization of Purdue Pharma L.P. and its Affiliated Debtors.

[3] Rhodes Tech and Rhodes Pharma are wholly owned by Purdue Pharma as of December 2019. *See* AlixPartners, Cash Transfers of Value Analysis Report, December 16, 2019, attached as Appendix B to the Expert Report of Richard A. Collura ("Collura Report"), 339.

[4] Purdue Pharma's parent entities include Pharmaceutical Research Associates L.P. ("PRA L.P."), a Delaware limited partnership, and PPI, a New York corporation. As of December 2019, PRA L.P. holds 100% ownership of Purdue Pharma, while PPI is the general partner with no equity interest. PRA L.P. is majority-owned by PLP Associates Holdings L.P., a Delaware limited partnership, which is wholly owned by BR Holdings Associates L.P., a Delaware limited partnership. Beacon Company ("Beacon"), a Delaware general partnership, and Rosebay Medical Company L.P. ("Rosebay"), a Delaware limited partner, are parent companies of BR Holdings Associates L.P., each with 50% ownership. Before 2018, PRA L.P. was named Purdue Holdings L.P. PPI is in the Debtor Group. *See* Appendix B to the Collura Report, 339, 341.

(10) The information I relied upon to prepare this report is from a variety of sources, including the Rule Report, information provided by Counsel and Purdue Pharma management and staff, Purdue Pharma and IAC documents, and publicly available information. In preparing this report, I have assumed the accuracy of the information provided to me and without independent verification regarding the completeness and accuracy of the information reviewed. I am not expressing an independent opinion regarding the accuracy and completeness of this public and non-public information. My analyses and opinions are based on the scope of the available materials cited herein. I may further refine my opinions expressed in this report if additional information regarding certain transfers becomes available, particularly transfers involving Purdue Pharma and other Debtor entities.

(11) Bates White is being compensated for my time on this matter at my standard billing rate of $925 per hour. In addition to my own time, Bates White is being compensated for the time of other Bates White professionals working under my direction to perform supporting work and analyses in connection with my preparation of this report. My opinions in this matter are in no way dependent on my or Bates White's compensation, nor is my or Bates White's compensation in any way dependent on my opinions in this matter or the outcome in this matter.

III. Transfers assessed

(12) The transfers I examined are described in the Rule Report. The Rule Report contains 37 transfers (27 intercompany transactions and 10 non-cash transfers) that I have grouped into four categories: (i.) royalties; (ii.) intellectual property rights; (iii.) equity; and (iv.) other transfers. The total gross intercompany transaction values are $2.6 billion, with non-cash transfers comprising $400 million, for the period of my analysis between January 1, 2008 and the Petition Date. The non-cash transfers include assets that Purdue Pharma transferred to PRA L.P. for no consideration.[5]

(13) The four transfer categories are:

- Royalty transactions: These are intercompany agreements associated with the licensing of rights to patents, trademarks, or other intellectual property. These arrangements granted the licensee (either Purdue Pharma or the IACs) the right to sell certain pharmaceutical products in specified territories (*e.g.*, the United States, Europe, or Asia) in exchange for the payment of a royalty and/or other payments to the licensor.
- Intellectual property ("IP") transfers: These are transfers of the rights to a patent, trademark, or other intellectual property from one related party to another. These include the transfer of certain rights from Purdue Pharma to PRA L.P. or Rhodes Pharma, and the purchase of certain

[5] PRA L.P. is a Delaware limited partnership that holds 100% ownership of Purdue Pharma, as of December 2019. *See* Appendix B to the Collura Report, 339.

intellectual property assets by Purdue Pharma from Purdue Pharma (Canada) ("Purdue Pharma Canada").

- Equity transfers: These include the transfers of certain equity holdings in third-party pharmaceutical companies or equity interest in related-party entities from Purdue Pharma to PRA L.P. for no consideration. These were in-kind distributions, and Purdue Pharma did not receive any compensation in return for transferring these equity holdings or equity interest to PRA L.P.
- Other transactions: These are all other transfers that are not included in the categories defined above. These other transfers include payments or receipts for goods and services by Purdue Pharma or the other Debtor entities to the IACs and vice versa. I have sub-grouped these transactions into research and development ("R&D"), finished goods, manufacturing, active pharmaceutical ingredients ("API"), administrative services, and office space related transactions.

(14) I have also analyzed the transactions between Purdue Pharma and Rhodes. Since Rhodes is currently part of the Debtor Group, any underpayments by Rhodes or overpayments by Purdue Pharma in the related party transactions between them would not represent a loss of value to the Debtor entities, except to the extent that any such under- or overpayments facilitated additional cash distributions by Rhodes to Sackler entities outside the Debtor Group prior to the Petition Date. During 2008 and 2017, Rhodes made $28.5 million in net cash distributions to the Sacklers. Rhodes did not make any cash distributions to the Sacklers after 2017 and paid $70,000 in tax distributions in 2018.[6]

IV. Assessment methods

(15) I analyzed the value of the intercompany transactions and non-cash transfers using methods commonly applied in transfer pricing analyses. These methods include comparing the related-party transactions at issue with similar arm's-length transactions or with the royalty or profit earned by licensors in other, comparable third-party arrangements. Where applicable, I also analyzed the effective profit split in some of the related-party transactions, and I performed other financial modeling and statistical analysis. Where the information was available to do so, I also evaluated the substance of the related-party transfers to assess their overall commercial purpose in addition to assessing their value. In certain instances, I evaluated the detail regarding costs and expenses incurred. I also evaluated the markup paid for the services provided or received by performing an analysis of comparable companies providing similar services. This section describes the specific methodological approaches used to assess the four categories of transactions.

[6] *See* Appendix B to the Collura Report, 25.

IV.A.1. Royalty transfers in related-party licenses

(16) Agreements that license IP, such as a patent covering a pharmaceutical product (*i.e.*, a drug), often include a royalty rate (usually expressed as a percentage of net sales) and other payments (*e.g.*, upfront payments or certain defined milestone payments) paid by the licensee. The agreed-upon royalty rates are often derived based on the relative contributions and risks taken by the parties to the agreement, as well as the expected size and profitability of the commercial opportunity. For example, if marketing a product requires a large upfront investment by the licensee (*e.g.*, in further product development or in performing clinical trials) and there is significant uncertainty surrounding the product's success in that market, the licensee is shouldering a high degree of risk, and the royalty rate paid to the licensor will tend to be lower, all else equal. On the other hand, if a product's success (*i.e.*, marketing approval with regulatory authorities) is virtually assured and the product is expected to earn large profits and a high profit margin, then the royalty rate paid to the licensor will tend to be higher.[7]

(17) I use two methods that are commonly applied to assess an arm's-length royalty rate. The first method compares the related party royalty rate (expressed as a percentage of sales) to the royalty rates found in broadly similar third-party licensing agreements. The second method examines whether the implied profit split between the related party licensor and licensee(s) is consistent with profit splits observed for similar third-party licensing agreements. The second method is an important confirming method, since related party royalty rates could be dissimilar to third-party comparison royalty rates because of differences in the products' expected profitability. Such product profitability differences are more likely to be captured in analyzing the effective profit splits between licensors and licensees, even for licenses with royalties defined as a percentage of sales.

(18) In order to identify licensing agreements that were broadly comparable to the OxyContin license agreements between Purdue Pharma and the IACs (which are by far the most important related party licenses at issue), I applied the following criteria to sort through more than 4,000 public license agreements in the pharmaceutical industry.[8] In my analysis, I only included license agreements with the following characteristics:

- The agreements involve pharmaceutical preparations;[9]

[7] Pharmaceutical companies are required to receive marketing authorization from regulatory bodies in their respective countries before commercial sales. For instance, in the U.S., pharmaceutical companies involved in drug development go through a series of distinct development phases with the Food and Drug Administration (FDA) before applying for approval. *See* U.S. Food and Drug Administration, "The Drug Development Process," available at https://www.fda.gov/ForPatients/Approvals/Drugs/default.htm.

[8] I used the ktMINE royalty rates database to compile and select licensing agreements. ktMINE pulls public financial disclosures and other data sources for publicly-available agreements. A full description of the database can be found at https://www.ktmine.com/ip-data/royalty-rates/.

[9] Pharmaceutical preparations are defined as drugs intended for human or veterinary use, presented in their finished dosage form, including materials used in the preparation and/or formulation of the finished dosage form.

- The agreements specify a royalty rate (in terms of percent of sales);
- The agreements reflect arm's-length relationships between the licensor(s) and licensee(s); and
- The agreements did not involve co-development agreements, asset sales, medical devices or technologies, universities, or other not-for-profit organizations.

(19) Of the 4,000 agreements reviewed, I identified 27 agreements with one or more characteristics that could provide a basis for comparison with the relevant OxyContin license agreements. In addition to the publicly reviewed agreements, seven additional, potentially comparable third-party agreements were identified in the company materials and through additional research. I also reviewed and included three other agreements identified by the Official Committee of Unsecured Creditors' consultants.[10] The royalty rate and payment data within these agreements were extracted, standardized, and used to compute various summary statistics, including for certain subgroups of the available third-party licenses.

(20) Given the breadth of many of these agreements, in order to supplement these summary statistics, I also performed a regression analysis in order to estimate the impact on arm's-length royalty rates of certain potentially important variables, *e.g.*, the licenses' exclusivity, development stage, type of product formulation, and geographic scope. A regression analysis is a widely used statistical tool in economics that uses data to estimate a relationship between a variable of interest, such as the market royalty rates in my analysis, and a number of factors that may influence it. The estimated relationship allows me to assess how the market royalty rate increases or decreases, on average, as these other factors change. It also provides a method of comparing the relative impact of these different factors on the royalty rate. I use the data and information extracted from the comparable license agreements to estimate the relationship between the market royalty rates and the aforementioned potentially important variables, and I incorporate the results of this regression analysis in deriving my estimate of an arm's-length royalty rate for a license by Purdue Pharma to the IACs to sell OxyContin outside the U.S.

(21) In addition to assessing the royalty rate, I also analyzed the effective profit split between Purdue Pharma and the IACs with respect to the licensed products, and I compared these results to the resulting effective profit splits estimated for comparable third-party transactions. In performing this analysis, I apply the terms of the licensing agreement to the expected value of the contributions by the licensor(s) and the licensee(s).

See Harvard Catalyst, "Harvard Catalyst Profiles," *available at* https://connects.catalyst.harvard.edu/Profiles/display/Concept/Pharmaceutical%20Preparations.

[10] Creditors' Committee means the statutory committee of unsecured creditors appointed by the U.S. Trustee on September 27, 2019 pursuant to section 1102(a)(1) of the Bankruptcy Code.

(22) In analyzing the royalty transactions for products other than OxyContin, I primarily rely on the profit share method to evaluate whether Purdue Pharma was disadvantaged.

IV.A.2. Intellectual property ("IP") transfers

(23) The transferred IP rights were valued using a discounted cash flow ("DCF") methodology. These include the rights for non-ADF OxyContin, Dilaudid, MS Contin, and Morphine Sulfate Extended Release.

(24) A DCF analysis is a commonly used methodology to value an asset (*e.g.*, IP rights) based on the present value of its expected cash flows over a given period of time. Cash flows are the net amount of cash inflows and outflows for a particular asset, where cash inflows are typically revenues, and cash outflows are asset-specific R&D, manufacturing, sales, and marketing expenses, as well as other asset-specific costs and investment requirements. The cash flows for each year are then discounted to present value terms as of the valuation date, using a discount rate based on either the expected risks of the cash flows associated with the asset at issue, what the firm could have earned from alternative uses of its capital (*i.e.*, its opportunity cost), its cost of capital, or its hurdle rate. The result of the DCF analysis can be considered the overall value of the asset. The value of the asset is also referred as the net present value ("NPV") of the asset.

(25) The DCF value for each transfer was computed using historical data and management forecasts, corroborated where possible with third-party sources based on an analysis of the asset's royalty income (as in the case of the transfer of the non-ADF OxyContin rights) or the profits from the sales of the relevant pharmaceutical products. These valuations were performed on pre-tax cash flows, since the IP transfers at issue were non-tax transfers. Where applicable, the royalty rate included as part of the DCF analysis was based on an arm's-length market royalty rate, rather than the agreed-upon royalty rate between the related parties. I have used a discount rate of 9%, which is the discount rate utilized by Purdue Pharma based on my review of internal valuation analyses performed by the company and discussions with Purdue Pharma's finance professionals. The present value of the transfer was calculated using the date of the transfer as specified in the assignment agreement.

(26) Purdue Pharma's purchase of Adhansia and Adhansia XR ("Adhansia") from Purdue Pharma Canada was assessed using a profit share analysis. A forecasted profit and loss statement served as the basis to calculate the profit split between the two parties. I reviewed forecast data, purchase agreement terms, and Purdue Pharma's internal analysis to compare the expected value of the contributions by the licensor and the licensee.

IV.A.3. Equity transfers

(27) Several of the transfers were either (1) equity holdings in public and private pharmaceutical companies or (2) equity in related party entities transferred from Purdue Pharma to PRA L.P. I consider these transfers to be consistent with in-kind distributions or dividends. The Rule Report provides estimates of the book value of these transfers on Purdue Pharma's balance sheet.

(28) I have used the fair market value of the equity holdings at the time of the transfers to estimate the value of these transfers when this information was available. Absent this information, I have relied on the invested value (*i.e.*, the purchase price) or the recorded equity value of these holdings by Purdue Pharma. Where applicable, I have also considered the value of additional investments made by Purdue Pharma in these entities during the applicable ownership period between 2008 and the Petition Date in estimating the total value transferred from Purdue Pharma to PRA L.P. in these transactions.

IV.A.4. Other transfers

(29) For the intercompany transactions that involved a payment of cost (for a product or service) plus a markup, I have evaluated the reasonableness of the markup by comparing that markup to the amount earned by comparable firms providing similar services.[11] For each of these other transactions (*e.g.*, for R&D, finished goods, manufacturing, security services, internal audit services, and environmental, health, and safety ("EHS") services), I performed an analysis of comparable companies providing similar services and evaluated hundreds of potential comparables to identify the closest relevant comparable companies for the each transaction and the period at issue. I then compared the markup paid or received by Purdue Pharma (typically 5% or 10%) to the interquartile range (*i.e.*, the 25th and 75th percentile) of markups earned by third parties to determine the reasonableness of the intercompany transfers. If the related party markup was outside this range, I calculated the difference between the median markup and the actual markup to determine the net (uncompensated or overcompensated) transfer in value from Purdue Pharma to the related party in the respective year.

(30) For certain transactions, such as Purdue Pharma's purchases of API from Rhodes Tech, I compared the prices paid by Purdue Pharma to the related party relative to prices charged by third-party suppliers. In these instances, the prices charged by third-party suppliers serve as a benchmark to calculate the premium or discount Purdue Pharma paid to the related party supplier relative to arm's-length amounts, which in turn reflect potential transfers of value.

[11] Markup represents a fee charged on the costs or expenses. For example, if the cost charged by the provider of the service was $100 and the markup percentage is 5%, the markup is $5 for a total of $105 for the cost and markup.

IV.B. Types of materials reviewed

(31) My team and I have spent more than 15,000 hours reviewing a large number of documents and other materials to evaluate the intercompany transactions and non-cash transfers. Specifically, I have relied on the following information as part of my assessment:

- Purdue Pharma, IAC, and other Sackler-owned entity materials:
  - All of the annual financial statements from 1999 to 2017 for Purdue Pharma and its subsidiaries: These statements include the Combined Balance Sheet, Combined Statement of Income, Combined Statement of Equity, Combined Statement of Cash Flows, and the notes to the Combined Financial Statements. E&Y, an independent auditor, audited the combined financial statements. I also reviewed the unaudited quarterly financial statements from 2018 through the second quarter of 2019;
  - Various board presentations and other documents associated with scheduled board meetings. The board documents addressed proposals regarding licensing arrangements, intercompany transactions, and other business decisions;
  - Internal documents and communications: These include business memoranda regarding strategy, forecasts of sales, transaction negotiations, and utilization of company resources; and
  - Financial information on Mundipharma entities: These include sales data for various Mundipharma entities, and profit and loss statements regarding OxyContin in the ex-U.S. markets. Mundipharma represents the ex-US entities owned by the Sackler family.
- Transfer pricing reports prepared for certain transactions between Sackler-owned entities: These reports were prepared by Horst Frisch, a transfer pricing consulting firm, to assess certain intercompany transactions between Purdue Pharma and the IACs, including:
  - Services performed by Mundipharma LLC;
  - The manufacturing arrangement between Purdue Pharma and Mundipharma Laboratories GmbH ("Mundipharma Labs");
  - Services performed by Purdue Pharma Technologies Inc. ("PPTI");
  - The MS Contin royalty agreement between Purdue Pharma and Mundipharma A.G.;
  - The OxyContin royalty agreements between Purdue Pharma, Mundipharma DC B.V., Mundipharma Labs, and Napp Pharmaceutical Holdings Limited;
  - Manufacturing services performed by Purdue Pharma for Rhodes Pharma;
  - Product procurement performed by PPTI; and

- Service arrangements between Purdue Pharma and Mundipharma EDO GmbH ("EDO") and Mundipharma Research Limited ("MRL").

- Third-party research and analysis: These include third-party research and market analyst reports for both general information and detail on relevant transactions. These sometimes also served as a potential data source for my analyses if they contained royalty rate and/or payment information.
- Public and commercial databases for financial information, pharmaceutical sales, and IP license terms. These include:
  - Various datasets on relevant transactions and agreements such as IP transfers and royalties;[12]
  - Financial data and/or required disclosures for public companies with markup data for comparable transactions[13]; and
  - Foreign exchange rate data obtained from Federal Reserve Economic Data ("FRED").
- Data in the public domain (regulatory filings, industry reports): These include data containing contextual information on various drugs, such as drug development status, pipeline, and general trends in the pharmaceutical industry. Also included are financial filings made by public companies with the Securities and Exchange Commission ("SEC").[14]
- Information from Purdue Pharma: These include discussions with Purdue Pharma employees to ascertain additional details about certain intercompany transactions. The functions and titles of the Purdue Pharma employees include: Executive Vice President and Chief Financial Officer, former Senior Vice President of IP Law and Public Health Initiative, Executive Director of Treasury, Director of FP&A, Associate Director of SG&A Finance, Vice President of Corporate Law and Assistant Corporate Secretary, Chief Technical Operations Officer, Director of Finance, and Associate Director of Accounting and Financial Reporting.
- Information from Norton Rose: These include discussions with attorneys from Norton Rose, which previously provided advice to the Sackler family for the intercompany agreements. I also received documents and data made available by Norton Rose.

(32) All of the documents relied upon in this report have been produced or are appended hereto. Appendix B lists the materials I considered in forming my opinion.

[12] The pharmaceutical licenses were identified ktMINE, which is a commercial database utilized in Transfer Pricing analysis and IP strategy and valuation. A full description of the database can be found at https://www.ktmine.com/ip-data/royalty-rates/.

[13] The financial data for public companies was obtained from S&P CapitalIQ, which is a commercial database utilized for this purpose.

[14] The public company filings were accessed via the SEC's EDGAR (Electronic Data Gathering, Analysis, and Retrieval system) database.

V. Transfer values

(33) Based on the information available, I conclude that 16 of the 37 transactions resulted in payments to Purdue Pharma, or transfers of value, that were lower than what one would expect if they had been between Purdue Pharma and unrelated third parties. I estimate that the underpayments to Purdue Pharma in its related party transactions outside the Debtor Group, or its transfers of value, total $1.4 billion between 2008 and September 15, 2019.[15] In the detail regarding the transactions (Appendix A), I also describe the sensitivity analyses I conducted with the range of estimates for the various transfers.

(34) Four of the transactions comprise approximately 90% of the total estimated underpayments to or other transfers of value from Purdue Pharma in its related party transactions outside the Debtor Group:

- Underpayment of OxyContin royalties: Between 2008 and September 15, 2019, royalties paid to Purdue Pharma by IACs for OxyContin sales outside of the U.S. were below market royalty rates for similar pharmaceutical products. I estimate the total underpayment of royalties over this period to be $486 million.
- Transfer of non-Abuse Deterrent Formulation ("ADF") IP rights: Purdue Pharma's rights to the non-ADF version of OxyContin sold outside of the U.S. were transferred in 2017 to PRA L.P. for no consideration. I estimate the value of this transfer of IP rights to be $252 million.
- Transfer of equity in Infinity Pharmaceuticals, Inc. ("Infinity"): There was a series of transfers of Purdue Pharma's equity holdings in Infinity (a public pharmaceutical company) to PRA L.P. in 2008, 2009, and 2013 for no consideration. I estimate the value of these equity transfers to be $305 million.
- Transfer of equity in Lucien Holdings S.ar.l ("Lucien"): Purdue Pharma transferred its equity holdings in Lucien (a related party) to PRA L.P. in 2010 for no consideration. I estimate the value of this equity transfer to be $199 million.

(35) The next section summarizes my analysis of the four main transfer categories. More detail on both the transfers and my analysis of the transactions and transfers is available in Appendix A.

[15] The annual net underpayments to or transfers of value from Purdue Pharma are as follows – 2008: $68 million, 2009: $113 million, 2010: $306 million, 2011: $79 million, 2012: $72 million, 2013: $336 million, 2014: $35 million, 2015: $28 million, 2016: $27 million, 2017: $272 million, 2018: $12 million, and YTD Sept. 15, 2019: $6 million. This excludes non-arm's-length transfers in transactions between Purdue Pharma and Rhodes Pharma because Rhodes Pharma is part of the Debtor Group.

V.A. Royalty transfers in related-party licenses

(36) I have compared the terms of three groups of related-party IP licensing agreements between Purdue Pharma and the IACs, Pharmaceutical Research Associates, Inc. ("PRA Inc."), and Mundipharma A.G. with comparable arm's-length licensing agreements selected using the process described above. I have also compared the terms of two additional related-party IP licensing agreements between Purdue Pharma and Rhodes Pharma (now part of the Debtor Group) with similar arm's-length arrangements. These five groups of licensing transactions are as follows:

- Royalty payments made by the IACs to Purdue Pharma for the sales of ADF and non-ADF OxyContin in ex-U.S. countries;
- Royalty payments by Purdue Pharma to PRA Inc. for the sales of Betadine and Senokot in the U.S.;
- Royalty payments by Purdue Pharma to Mundipharma A.G. for the sales of MS Contin in the U.S.;
- Profit share payments by Rhodes Pharma to Purdue Pharma for the sales of Butrans Authorized Generic (AG) in the U.S.; and
- Potential payments by Rhodes Pharma to Purdue Pharma for the sales of generic and branded Dilaudid in the U.S.

(37) Figure 1 summarizes the transaction amount, transfer value, and any net differential to Purdue Pharma for these IP licensing transactions. I conclude that Purdue Pharma received below market royalty rates from the foreign IACs for the ex-U.S. sales of OxyContin (an opioid analgesic). I also conclude that Purdue Pharma was not disadvantaged in the four other related-party licensing transactions.

V.A.1. Ex-U.S. OxyContin Royalties

(38) The largest of these related party licensing transactions are the related party OxyContin licenses and corresponding royalty payments received by Purdue Pharma, as the licensor, from the foreign IACs for ex-U.S. OxyContin sales. From January 1, 2008 to September 15, 2019, Purdue Pharma received a total of $622 million in net royalties, of which $615 million was attributable to OxyContin sales. This amount includes royalties on sales paid by the IACs and paid by a third-party in Japan. My analysis focuses on the $519 million in royalties received from IAC sales and excludes the $96 million in royalties received from sales in Japan, as the latter are the result of a separate arm's-length agreement with a third party.[16]

[16] This corresponds with IAC's ex-US OxyContin sales of $4,287 million during 2008 to September 15, 2019. This

(39) Purdue Pharma executives developed the idea of OxyContin, the brand name for an extended release formulation of oxycodone.[17] Purdue Pharma received approval for 10, 20, and 40 mg OxyContin (non-ADF) on December 12, 1995.[18] OxyContin in the 80 mg dosage form was approved in the U.S. in 1996.[19] Outside of the U.S., non-ADF OxyContin was first launched in Canada and certain Nordic countries in 1996, and in Germany in 1998.[20]

(40) Starting in the late 1990s, Purdue Pharma licensed OxyContin to the Sackler-owned Mundipharma group of companies for manufacturing, sale, and distribution outside the U.S.[21] Mundipharma is a well-established group of regional pharmaceutical entities operating in overseas markets, with the first Mundipharma entity being founded in Switzerland in 1957.[22] Mundipharma operations started in the United Kingdom in 1966.[23] By out-licensing OxyContin to Mundipharma for sale in ex-U.S. markets, Purdue Pharma was able to leverage Mundipharma's extensive manufacturing, sales, and distribution infrastructure in ex-U.S. markets, as well as Mundipharma's capabilities in obtaining ex-U.S. regulatory approvals. In addition to their licensing transactions, Purdue Pharma and the Mundipharma companies cooperate and coordinate across a wide range of functions, including new product R&D, clinical trials, regulatory approvals, manufacturing, strategy, and administrative services, as evidenced in the number of intercompany transactions between them listed in the Rule Report.

(41) Based on my analysis, I conclude that the royalty rates that the IACs paid Purdue Pharma on their ex-U.S. sales of OxyContin during 2008 to September 15, 2019 were lower than what unrelated parties would have paid based on comparable arm's-length agreements. Based on my review of comparable licensing agreements involving pharmaceutical products, I conclude that an arm's-length royalty rate for a license to manufacture, sell, and distribute patent-protected OxyContin in ex-U.S. markets would be approximately 25%, with a reasonable arm's-length range of between approximately 20% and 30%. This estimate is based on the results of a regression analysis of the 37 comparable licensing agreements, as well as on the ranges of royalties observed for various subsets of those agreements. This analysis indicates that products similar to OxyContin (*i.e.*, late-stage pain products in pill form

excludes the sales of non-ADF OxyContin that was transferred to PRA L.P. on January 1, 2017. The corresponding weighted average royalty rate paid by the IACs was 12% between 2008 and 2016.

17 *See* US5656295A, available at https://patents.google.com/patent/US5656295A/en; Three of the four inventors (Benjamin Oshlack, Mark Chasin, Robert Kaiko) were employees of Purdue Pharma.

18 Milligrams is abbreviated as "mg." *See* Center for Drug Evaluation and Research, "Approval Package for Application Number: NDA 20-553/S-002," available at https://www.accessdata.fda.gov/drugsatfda_docs/nda/96/020553s002.pdf.

19 *See* Center for Drug Evaluation and Research, "Approval Package for Application Number: NDA 20-553/S—2," 13, 32, available at https://www.accessdata.fda.gov/drugsatfda_docs/nda/96/020553s002.pdf.

20 PPLPUCC002458291.

21 Mundipharma refers to the global network of IACs owned by the Sackler family that is engaged in R&D, production, marketing, and sales of pharmaceutical products.

22 "Mundi" means world in latin and "pharma" is ancient greek for medicine. Mundipharma, "Our story," available at https://www.mundipharma.com.au/about-us/our-story/.

23 Mundipharma, "Our story," available at https://www.mundipharma.com.au/about-us/our-story/.

sold ex-U.S. under an exclusive license) are associated with royalty rates of approximately 23% to 25% before loss of exclusivity, as indicated by the results of my regression analysis. This conclusion is consistent with the upper quartile of the royalty rates among the broader set of comparables of approximately 25%, which is what I would expect for OxyContin, as a late-stage pain product. The regression analysis results indicate that late stage pain products in pill form such as OxyContin would tend to be able to command a higher royalty rate when sold in the U.S., in contrast to ex-U.S. markets, which are the geographic territories for the OxyContin licenses at issue, and which tend to have lower pharmaceutical prices and lower profitability than in the U.S. The actual related-party royalty rates paid by the IACs to Purdue Pharma on their ex-U.S. sales of OxyContin while it was under exclusivity were approximately 13% between 2008 and 2012 and approximately 15% after 2012.

(42) Most of a pharmaceutical product's profits occur during the period in which its protected intellectual property provides it market exclusivity. However, even after the intellectual property covering the product expires (enabling generic pharmaceutical copies to compete), there often remains some residual value associated with the branded product and its associated (legally-protected) trademarks. For example, some patients prefer the branded product over the generic product and are willing to pay more for the brand. As a result, while royalty rates are almost always reduced (often quite substantially) in third-party licenses after the core composition patents expire, branded products are generally still earn able to earn significantly higher profits than their generic competitors. In 2013, the core composition patents for non-ADF OxyContin were no longer in force, enabling generic competition outside of the U.S.[24] Several of the third-party agreements I have reviewed specify royalty rate terms after market exclusivity expires. The actual related-party royalty rates paid by the IACs for non-ADF OxyContin after Purdue Pharma's core composition intellectual property expired were approximately 7% after 2012. This represents a 72% reduction of the estimated market royalty rate of 25% for patent-protected OxyContin. The average loss-of-exclusivity reduction in royalty rates that I identify in my review is smaller: about 40% for pain products, and no more than 60% for a wider range of products. Applying the mid-point 50% reduction to the estimated market royalty rate of 25% for patent-protected OxyContin yields a 12.5% royalty rate after loss of market exclusivity, which is also consistent with the range of royalty rates in several of the relevant third-party market benchmark licenses after their loss of exclusivity.[25]

[24] The US Food and Drug Administration announced in 2013 that they would not approve generic forms of non-ADF OxyContin. *See* U.S. Food and Drug Administration, "FDA Actions on OxContin Products," April 16, 2013, available at https://www.fda.gov/drugs/information-drug-class/fda-actions-oxycontin-products-4162013. As a result, a generic form of OxyContin is not available in the United States. There are several markets outside of the United States where the branded and generic versions of non-ADF OxyContin are sold. The royalty rate described here covers the branded form of non-ADF OxyContin.

[25] The rights to non-ADF OxyContin were transferred to PRA L.P. after 2016 and Purdue Pharma no longer received royalty income for the non-ADF version of OxyContin after 2016.

(43) Comparable license agreements in the pharmaceutical industry generally require the licensee to bear local development and regulatory costs. In the case of OxyContin, I estimate that Purdue Pharma reimbursed Mundipharma approximately $40 million for local development and regulatory costs over the period 2008 to 2019, expenses that in arm's-length transactions would generally be borne by the licensee rather than the licensor. As a result, to account for these payments by Purdue Pharma, I adjust the arm's-length royalty rate upward by an average of 1.5% during the applicable time period (2008 to September 15, 2019).

(44) Total OxyContin royalties actually received by Purdue Pharma are $622 million. The difference between the arm's-length amount of royalties and the actual amount of royalties received by Purdue Pharma is $486 million, which represents a transfer of value from Purdue Pharma to Mundipharma.[26]

V.A.2. Betadine and Senokot royalties paid to PRA Inc.

(45) Purdue Pharma obtained the right to use the Betadine (an antiseptic) and Senokot (a laxative) trademarks from Purdue Frederick Company in April 2003 through its subsidiary Avrio Health L.P. (then known as Purdue Products L.P.). On November 29, 2006, Avrio Health L.P. entered into agreements with PRA Inc. for the rights to manufacture and sell Betadine and Senokot and to use their trademarks in the U.S for a 5% royalty rate. Purdue Pharma paid PRA Inc. $22.8 million in royalties from 2008 to September 15, 2019 on behalf of Avrio Health L.P. An analysis of the effective profit split between the licensor and licensee shows that Purdue Pharma was not disadvantaged under the related-party license agreements relative to benchmarks from arm's-length agreements.

V.A.3. MS Contin royalties paid to Mundipharma A.G.

(46) MS Contin (an extended release formulation of the opioid analgesic morphine sulfate) was first introduced in the U.S. in 1984 by Purdue Frederick Company for management of pain severe enough to require daily, around-the-clock, long-term opioid treatment.[27] The FDA approved MS Contin in 1987. The extended release technology for MS Contin was in-licensed by Purdue Pharma from Napp Pharmaceuticals Limited ("Napp"), a foreign IAC that was founded in 1923. Purdue Pharma obtained the rights to the product from Mundipharma A.G. through various license agreements.[28]

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[26] This does not include an adjustment to the arm's-length royalty rate paid by a third party for OxyContin sales in Japan.

[27] U.S. Food and Drug Administration, Orange Book Approved Drug Products with Therapeutic Equivalence Evaluations for NDA 019516, available at: https://www.accessdata.fda.gov/scripts/cder/ob/results_product.cfm?Appl_Type=N&Appl_No=019516#18580. U.S. Food and Drug Administration Label Search, available at https://www.accessdata.fda.gov/drugsatfda_docs/label/2016/019516s049lbl.pdf. I understand based on my discussions with Purdue Pharma that Contin stands for continuous.

[28] The license agreements and amendments were made in these years: 1992, 1997, 1998, and 2008. These agreements also

(47) In 2008, Purdue Pharma was granted a license to manufacture, use, and sell MS Contin in the U.S., including the rights to use applicable know-how, trademark, and patents, for an initial term of 8 years, with a possible three-year extension, from Mundipharma A.G. This agreement contained similar terms as prior license agreements for MS Contin, with a 15% profit share on authorized generic sales and a 10% royalty rate on MS Contin brand sales. Under this agreement, Purdue Pharma paid Mundipharma A.G. $11 million in royalty payments from 2009 to April 28, 2017. These rights were later transferred to PRA L.P., and Purdue Pharma's royalty payments to Mundipharma A.G. were terminated. Based on an analysis of the effective profit split between the licensor and licensee, Purdue Pharma was not disadvantaged under the related-party license for MS Contin relative to benchmarks derived from arm's-length agreements.

V.A.4. Butrans Authorized Generic ("AG") profit share payments by Rhodes Pharma

(48) Purdue Pharma in-licensed the patch technology from [redacted] as part of its development of Butrans (an opioid analgesic) in an agreement dated April 12, 1995. This agreement included the rights to use, sell the product, and license the patents, system design, and know-how in the U.S.[29] Butrans was approved by the U.S. FDA in 2010.[30]

(49) On July 1, 2017, Purdue Pharma and Rhodes Pharma (part of the Debtor Group) jointly launched Butrans AG based on an informal agreement.[31] On December 5, 2018, the two parties entered into an official distribution agreement that appointed Rhodes Pharma as a non-exclusive distributor with the rights to market, distribute, and sell Butrans AG in the U.S. Pursuant to this agreement, Rhodes Pharma agreed to pay Purdue Pharma a profit share rate of 75% of gross profit, which would be reduced to 50% of gross profit in the event of generic entry not authorized by Purdue Pharma, or to 25% of gross profit if Purdue Pharma's authorized generics' market share was greater than 15%. From 2017 to September 15, 2019, Purdue Pharma received $77 million from Rhodes Pharma in such profit share payments. Based on an analysis of the effective profit split between the licensor and

involve parent companies of Purdue Pharma.

29 It was then amended in 1996 and each year during 2007 and 2018, except 2016.

30 *See* U.S. Food and Drug Administration, Orange Book Approved Drug Products with Therapeutic Equivalence Evaluations Product Details for NDA 021306, available at: https://www.accessdata.fda.gov/scripts/cder/ob/results_product.cfm?Appl_Type=N&Appl_No=021306#19764.

31 An authorized generic is when the branded manufacturer provides the finished product, but is generally packaged in generic form and the licensee performs the sales and marketing within the agreed-upon market. This is distinct from other generics in which the generic producer manufacturers and packages its own product. *See*, for example:

US Federal Trade Commission, "Authorized Generic Drugs: Short-term Effects and Long-term Impact," available at: https://www.ftc.gov/sites/default/files/documents/reports/authorized-generic-drugs-short-term-effects-and-long-term-impact-report-federal-trade-commission/authorized-generic-drugs-short-term-effects-and-long-term-impact-report-federal-trade-commission.pdf.

licensee, Purdue Pharma was not disadvantaged relative to benchmarks from arm's-length agreements.

V.A.5. Dilaudid license to Rhodes Pharma

(50) Purdue Pharma's subsidiary, Purdue Pharmaceutical Products L.P., acquired the U.S. rights to Dilaudid (an opioid analgesic) in two separate transactions in December 2007 and March 2008 from Abbott Laboratories. In 2010, Purdue Pharma granted Rhodes Pharma (part of the Debtor Group) a license to sell an authorized generic version of Dilaudid. There was no written agreement for this license, and no royalty payments were made by Rhodes Pharma to Purdue Pharma. On October 1, 2016, Purdue Pharma transferred its rights, title, and interest in Dilaudid to PRA L.P. for no consideration. Even assuming a royalty rate of 10% (*i.e.*, similar to the related party royalty rate paid by Purdue Pharma on its sales of MS Contin, or the upper end of comparable third-party royalty rates for a mature, well-established product with ample substitutes), the royalty payments associated with the licensing on Rhodes Pharma's estimated sales of Dilaudid AG would total $4.0 million during 2010–2015. However, this does not represent a loss of value, since the transfer occurred between two parties within the Debtor Group.

Figure 1: Royalty transfers ($ in millions)

Transaction	Payments from	Payments to	Transaction amount	Transfer value	Net differential to Purdue Pharma
A. Ex-U.S. OxyContin Royalties Royalty income from ADF and non-ADF ex-US sales, 2008–2019	IACs	Purdue Pharma	$622	$1,108	$486
B. Betadine and Senokot Royalties - PRA Inc. 5% royalty for Betadine and Senokot, 2008–2019	Purdue Pharma	PRA Inc.	$23	No overpayment	No loss of value
C. MS Contin 10% royalty for branded MS Contin, 2009–2017	Purdue Pharma	Mundipharma A.G.	$11	No overpayment	No loss of value
D. Butrans AG - Rhodes Pharma Royalty income (gross profit share), 2017–2019	Rhodes Pharma	Purdue Pharma	$77	$77	$0 Within Debtor
E. Dilaudid Generic & Branded Royalty income from license granted in 2010, additional value retained by Rhodes	Rhodes Pharma	Purdue Pharma	$0	No overpayment	No loss of value as transfer within Debtor

V.B. IP transfers

(51) I analyzed the reasonableness of the terms for four transfers of IP rights from Purdue Pharma to PRA L.P. and Purdue Pharma Canada. I also analyzed the reasonableness of the terms of one transfer of IP rights from Purdue Pharma and Rhodes Pharma (part of the Debtor Group). These IP transfers are as follows:

- Transfer of rights, title, and interest in non-ADF OxyContin in 2017 from Purdue Pharma to PRA L.P;
- Transfer of rights, title, and interest in Dilaudid in 2017 from Purdue Pharma to PRA L.P;
- Transfer of rights, title, and interest in MS Contin in 2017 from Purdue Pharma to PRA L.P;
- Transfer of rights to sell Morphine Sulfate ER in 2011 from Purdue Pharma to Rhodes; and
- Adhansia asset sale from Purdue Pharma Canada to Purdue Pharma in 2018 and 2019.

(52) Figure 2 summarizes the transaction amount, transfer value, and any net differential to Purdue Pharma for these IP rights transfers and asset sales. The net differential is calculated as the value of the IP right less the value received by Purdue Pharma. The IP rights transfers for which Purdue Pharma received no consideration are similar to other in-kind distributions from Purdue Pharma.

(53) Purdue Pharma received no consideration for the three IP rights transfers in 2017 to PRA L.P. Based on the DCF methodology described in section IV.A.2, the value of these three transfers to PRA L.P. was $520 million, as shown in Figure 2.

(54) In contrast, Purdue Pharma's acquisition of Adhansia from Purdue Pharma Canada did not result in an above arm's-length transfer of value from Purdue Pharma to Purdue Pharma Canada. This arrangement provided Purdue Pharma with an effective share of the profits from the sale of Adhansia in the U.S. that equals or exceeds what is often observed in comparable third-party agreements. The right to sell Morphine Sulfate Extended Release ("MSER") was transferred from Purdue Pharma to Rhodes Pharma for no consideration in 2011, but Purdue Pharma received $1.2 million in profit share payments in 2011. The estimated value of the transfer of the MSER rights is $223 million after accounting for the profit share payment, but this does not represent a loss of value, since the transfer occurred between two parties within the Debtor Group.

V.B.1. Transfer of non-ADF OxyContin IP rights to PRA L.P.

(55) On January 1, 2017, Purdue Pharma and PRA L.P. entered into multiple assignment and assumption agreements pursuant to which Purdue Pharma transferred to PRA L.P. all of its rights, title, and interest in Purdue Pharma's non-ADF OxyContin license agreements with ex-U.S. IACs. Purdue Pharma did not receive any consideration for this transfer. The value of this transfer of IP rights is approximately $252 million, based on the DCF method as of the transfer date, which represents a transfer in value from Purdue Pharma to PRA L.P.

V.B.2. Transfer of Dilaudid IP rights to Rhodes Pharma

(56) On October 1, 2016, Purdue Pharma transferred its rights, title, and interest in Dilaudid (an opioid analgesic) to PRA L.P. for no consideration. Subsequently, on May 1, 2017, PRA L.P. contributed the assets to Rhodes Pharma's then parent, Coventry Technologies L.P. ("Coventry"). These assets are currently part of the Debtor Group. The Dilaudid rights transfer value is estimated to be $23.2 million. This estimate includes $19.9 million in NPV for the rights, plus $3.3 million in prorated profit payments made to PRA L.P. in 2016 and 2017 after the rights transfer. However, this does not represent a loss of value, since the transfer, after the rights were subsequently transferred to Coventry, occurred between two parties within the Debtor Group.

V.B.3. Transfer of MS Contin IP rights to Rhodes Pharma

(57) On Oct. 1, 2016, Purdue Pharma transferred its rights, title, and interest in MS Contin (an opioid analgesic) to PRA L.P., which then contributed the assets to Rhodes Pharma's then parent, Coventry, effective May 1, 2017 for no consideration. Coventry was formed on July 8, 2004 with Purdue Pharma Inc. as the sole general partner. The estimate of the value of the MS Contin rights transfer to Purdue Pharma is $21.7 million, which includes $16.9 million in NPV for the rights, plus $4.8 million in prorated profit payments made to PRA L.P. in 2016 and 2017 after the rights transfer. However, this does not represent a loss of value, since the transfer, after the rights were subsequently transferred to Coventry, occurred between two parties within the Debtor Group.

V.B.4. Adhansia asset purchase from Purdue Pharma Canada

(58) On October 11, 2018, Purdue Pharma entered into an asset purchase agreement with Purdue Pharma Canada for Adhansia (a stimulant) assets. As of August 5, 2019, Purdue Pharma Canada received a total of $20.2 million pursuant to the asset purchase and related payments. These payments made by Purdue Pharma include upfront payments, milestone payments, and reimbursement to Purdue Pharma Canada for expenses incurred in obtaining FDA approval for Adhansia. Purdue Pharma also has an on-going obligation to pay Purdue Pharma Canada a royalty rate of 8% on Adhansia sales in the U.S. Of the total $20.2 million payment, Purdue Pharma paid $4.9 million, and Adlon Therapeutics L.P., which is part of the Debtor Group, paid $15.3 million. Purdue Pharma was not disadvantaged based on a profit share analysis, since the approximately 70% profit share to Purdue Pharma on U.S. sales of Adhansia equals or exceeds the profit shares typically observed in comparable third-party agreements.

V.B.5. Transfer of Morphine Sulfate Extended Release (MSER) IP rights to Rhodes Pharma

(59) In 2011, Purdue Pharma transferred all rights to sell MSER Generic (an opioid analgesic) to Rhodes Pharma (in the Debtor Group) for no consideration. No written agreements were prepared or signed for this transfer, but Purdue Pharma received $1.2 million in 2011 as a 50% share of profits. The estimate of the net MSER rights transfer value is $223.5 million. This reflects the NPV for the transfer of $224.7 million less the $1.2 million in profit share payments received from Rhodes Pharma. However, this does not represent a loss of value, since the transfer occurred between two parties within the Debtor Group.

Figure 2: IP rights transfers and asset sale ($ in millions)

Transaction	Transfer from	Transfer to	Transaction amount	Transfer value	Net differential to Purdue Pharma
A. Non-ADF OxyContin Transfer of rights, titles, and interest in 2017	Purdue Pharma	PRA L.P.	$0	$252	$252
B. Dilaudid rights Transfer of rights, titles, and interest in 2017	Purdue Pharma	PRA L.P.	$0	$23	No loss of value as transfer within Debtor
C. MS Contin Transfer of rights, titles, and interest in 2017	Purdue Pharma	PRA L.P.	$0	$22	No loss of value as transfer within Debtor
D. Adhansia asset sale to Purdue Pharma Purchase price (2018), cost reimbursement (2019), milestone payments (2019) and royalties	Purdue Pharma Canada	Purdue Pharma	$20.2	$20.2	$0
E. MSER Profit share payments for rights to sell in 2011 Additional value retained by Rhodes	Purdue Pharma	Rhodes Pharma	$1.2	$225	No loss of value as transfer within Debtor

V.C. Equity transfers

(60) I analyzed the value of three transfers of equity in unrelated parties from Purdue Pharma to PRA L.P. These equity transfers relate to Purdue Pharma's interests in the following third-party companies:

- Infinity;
- Novelos Therapeutics, Inc. ("Novelos"); and
- Kolltan Pharmaceuticals, Inc ("Kolltan").

(61) I also analyzed the value of four transfers of equity in related parties from Purdue Pharm to PRA L.P. These related parties are:

- Coventry;
- New Suffolk Holdings L.L.P. ("NSH");
- Millsaw Realty L.P. ("Millsaw"); and
- Lucien.

(62) Figure 3 summarizes the transaction amount, transfer value, and any net differential to Purdue Pharma for these equity transfers (*i.e.*, the difference between the value of the transfers and the value received). Purdue Pharma did not receive any consideration for any of these transfers, and thus I consider them similar to in-kind distributions. The total value of the benefits received by PRA L.P. from these equity transfers was $635 million, as summarized in Figure 3.

V.C.1. Third-party equity transfers

V.C.1.a. Transfer of equity in Infinity

(63) In 2008, 2009, and 2013, Purdue Pharma transferred its stock in Infinity, a public cancer drug discovery and development company, to PRA L.P. for no consideration. The estimated value of this transfer is $305 million based on the value of the stock at the time of the transfers. This estimate is based on the investments (*i.e.*, purchase price) made by Purdue Pharma in 2008 ($45 million), in 2009 ($30 million), and the 2013 transfer value of $230 million based on the market price at the time of the transfer. In comparison, the value of this transfer recorded by Purdue Pharma was $263 million, but this excludes the purchase price write-offs recorded by Purdue Pharma. PRA L.P. ultimately received $438 million from the subsequent sale of this equity position (after the date of the transfers from Purdue Pharma). This represents a transfer in value from Purdue Pharma to PRA L.P.

V.C.1.b. Transfer of equity in Novelos

(64) Novelos was a public company that develops and commercializes oxidized glutathione compounds for treatment of cancer and hepatitis. On February 11, 2009, Novelos entered into a collaboration agreement with Mundipharma International Corporation Limited, and Purdue Pharma purchased $10 million worth of Novelos shares and warrants. On August 25, 2009, Purdue Pharma made a second purchase of shares and warrants for $9 million. Purdue Pharma distributed all shares and warrants to PRA L.P. for no consideration in two separate transactions in March and August of 2009. The estimated value of the shares and warrants is $23.1 million based on the value at the time of transfer. This is based on the March 2009 distribution of $10 million (purchase price) and the August 2009

distribution with a value of $13.1 million (calculated via the Black-Scholes pricing model by Purdue Pharma). This represents a transfer in value from Purdue Pharma to PRA L.P.

V.C.1.c. Transfer of equity in Kolltan

(65) Kolltan Pharmaceuticals was a private company focused on oncology and immunology. Purdue Pharma made three different investments in Kolltan for a total of $13 million in 2008, and an additional investment of $2.1 million in 2014. Purdue Pharma subsequently transferred its equity in Kolltan to PRA L.P. for no consideration in 2009 and 2014. The estimated value of the equity holdings transferred to PRA L.P. is $15.1 million, based on the value of the equity at the time of the transfer and the purchase price paid by Purdue Pharma when it invested in Kolltan. This represents a transfer in value from Purdue Pharma to PRA L.P.

V.C.2. Related party equity transfers

V.C.2.a. Transfer of equity in Coventry

(66) Coventry was formed on July 8, 2004 with Purdue Pharma Inc. as the sole general partner. On January 1, 2008, Purdue Pharma transferred 100% of its interest in Coventry to PRA L.P. This transfer was made for no consideration. At the time of the transfer, the recorded book value of Coventry was $52.3 million, which is the estimated value of the transfer, as this is the best available information. The primary entities owned by Coventry, Rhodes Tech and Rhodes Pharma, are part of the Debtor Group. This does not represent a loss of value, since the equity transfer occurred between two parties within the Debtor Group.

V.C.2.b. Transfer of equity in NSH

(67) On April 30, 2010, Purdue Pharma transferred 100% interest in NSH to PRA L.P. for no consideration. NSH was a wholly owned Purdue Pharma subsidiary at the time of the transfer in 2010. Effective January 1, 2008, NSH entered into a silent partnership agreement with Mundipharma Vertriebsgesellschaft mbH & Co. KG ("Mundi KG"), a European associated company. Mundi KG develops, manufactures, and sells pharmaceutical products, which are marketed primarily to the medical and health care industries in Germany. Based on the information available to me, the estimated value of the NSH equity interest transferred to PRA L.P. is $32.8 million, per the equity value (*i.e.*, Partners' capital) recognized by Purdue Pharma at the time of the transfer. This represents a transfer in value from Purdue Pharma to PRA L.P.

V.C.2.c. Transfer of equity in Millsaw

(68) On January 1, 2009, Purdue Pharma transferred 100% of its equity interest in Millsaw to PRA L.P. under an Assignment and Assumption Agreement. This transfer was made for no consideration.

Millsaw was used for the purchase, lease, and sale of property. In 2010, Millsaw made a $30 million distribution to Beacon and Rosebay. This cash distribution is already captured in the Rule Report. At the time of the cash distribution, Millsaw was not included in Purdue Pharma's audited financial statements, and Millsaw was not a subsidiary of Purdue Pharma at the time. Based on the equity value (*i.e.*, Partners' capital) recognized by Purdue Pharma at the time of the transfer according to its financial statements, the estimated value of this equity interest transferred to PRA L.P. is $7.4 million. This represents a transfer in value from Purdue Pharma to PRA L.P.

V.C.2.d. Transfer of equity in Lucien

(69) On April 30, 2010, Purdue Pharma and PRA L.P. entered into an Assignment and Assumption Agreement, pursuant to which Purdue Pharma distributed its 100% equity interest in Lucien with a book value of negative $0.5 million to PRA L.P. for no consideration. Lucien owns various Mundipharma entities and is a limited partner in eight European start-up companies that develop, manufacture, and sell pharmaceutical products. Based on the information available to me, the estimated value of the transfer of Purdue Pharma's equity in Lucien is $199 million, based on Purdue Pharma's direct investments of $159 million over the period from January 2008 to April 2010, plus certain debt repayments made by Purdue Pharma on behalf of Lucien that improved Lucien's equity value by $41 million. This represents a transfer in value from Purdue Pharma to PRA L.P.

V.C.2.e. Transfer of equity in RSJ Company L.P. ("RSJ")

(70) On April 1, 2010, the partners of Purdue Pharma authorized the distribution of 100% of Purdue Pharma's ownership in RSJ to its limited partner PRA L.P., with an effective date of April 30, 2010. RSJ is a silent partner in Mundipharma TK ("TK"). TK develops, manufactures and sells pharmaceutical products, which are marketed to the medical and health care industries in Japan. This transfer is not broken out separately from the other equity transfers in the Rule Report. Based on the information available to me, the estimated value of this transfer is zero based on the equity value (*i.e.*, Partners' capital) recorded by Purdue Pharma at the time of transfer.

Figure 3: Equity transfers ($ in millions)

Sub-category	Transaction	Transfer from	Transfer to	Transaction amount	Transfer value	Net differential to Purdue Pharma
Third-party	**A. Infinity** Transfer of shares in 2008, 2009, and 2013	Purdue Pharma	PRA L.P.	$0	$305	$305
	B. Novelos Transfer of shares in 2009	Purdue Pharma	PRA L.P.	$0	$23	$23
	C. Kolltan Transfer of shares in 2009 and 2014	Purdue Pharma	PRA L.P.	$0	$15	$15
Related-party	**A. Coventry** Transfer of equity interest in 2008	Purdue Pharma	PRA L.P.	$0	$52	No loss of value as transfer within Debtor
	B. NSH Transfer of equity interest in 2010	Purdue Pharma	PRA L.P.	$0	$33	$33
	C. Millsaw Transfer of equity interest in 2009	Purdue Pharma	PRA L.P.	$0	$7	$7
	D. Lucien Transfer of equity interest in 2010	Purdue Pharma	PRA L.P.	$0	$199	$199
	E. RSJ Transfer of equity interest in 2010	Purdue Pharma	PRA. L.P.	$0	$0	$0

V.D. Other transfers

(71) A large number of the remaining transfers between Purdue Pharma and its related parties involve the provision of various services, such as administrative, purchasing, tax, contract research services, or other services, some of which are provided to Purdue Pharma by its related parties, and some of which Purdue Pharma provides to related parties. In some cases, based on discussions with Purdue Pharma, these interparty arrangements were established for tax purposes. The provider of these services is typically compensated based on the costs of providing the services, plus a markup. I have evaluated both the costs and the markups for all of these service transactions, and I conclude that they are generally reasonable and consistent with arm's-length dealings, with a few relatively limited exceptions.

(72) Figure 4 through Figure 9 summarize the transaction amount, transfer value, and any net differential to Purdue Pharma in each of these transactions.

V.D.1. R&D transfers

(73) In the pharmaceutical industry, contract research organizations ("CROs") assist pharmaceutical companies with the R&D and commercialization of new products as a potential means to reduce

costs. It is estimated that CROs command revenues of $29 billion.[32] They play an important role in a drug development process that is complex, lengthy, costly, and has a low likelihood of bringing a product to approval.[33] CROs are involved in every stage of the process from pre-clinical testing and up to and after a drug is approved for marketing.

(74) Purdue Pharma entered into R&D agreements with two Mundipharma entities: EDO and MRL. In those transactions, Purdue Pharma paid its related parties for their costs plus a 10% markup for research services. Based on market benchmarks, I conclude that the markups paid by Purdue Pharma in both transactions are reasonable and consistent with arm's-length dealings, and hence Purdue Pharma was not disadvantaged in these two transactions.

(75) Figure 4 summarizes the transaction amount, transfer value, and any net differential to Purdue Pharma in these transactions.

V.D.1.a. R&D agreement with EDO

(76) Purdue Pharma entered into a research services agreement with EDO effective January 18, 2013. Under this agreement, EDO provided Purdue Pharma certain services, such as sharing its identification of new oncology business opportunities for both Mundipharma and Purdue Pharma, the financial appraisal of new product opportunities, project management and planning, and projects to lower manufacturing costs. Purdue Pharma paid EDO its costs plus a 10% markup for these services, totaling $31.5 million from 2013 to September 15, 2019. This agreement was terminated effective August 15, 2019. It is my understanding that Purdue Pharma will hold the U.S. rights to the pipeline assets based on discussions with Purdue Pharma personnel. Based on my analysis of the profitability of comparable research service providers, the 10% markup paid to EDO is consistent with arm's-length payments. If Purdue Pharma does not hold the U.S. rights to the EDO assets, Purdue Pharma would not have received arm's-length value for the payments it made to EDO.

V.D.1.b. R&D agreement with MRL

(77) In 2003, Purdue Pharma entered into a research agreement with MRL for R&D services. Under this agreement, Purdue Pharma agreed to pay MRL its costs plus a 10% markup (or costs plus a 2.5% markup if the service provider is an associate approved sub-contractor) for these services. In 2010, Purdue Pharma and MRL replaced the 2003 agreement with similar terms and conditions but covering a revised list of products and projects. The 2010 agreement was amended in March 2017 and February 2018 to modify the products and projects covered. From January 2008 to September 2019,

[32] Credit Suisse, "CRO Industry Primer," June 20, 2016.

[33] For instance, only 9.6% of candidates ultimately succeed in gaining FDA approval based on study that covered 2006 through 2015. *See* Biotechnology Industry Organization, "Clinical Development Success Rates: 2006–2015," June 2016, available at https://www.bio.org/sites/default/files/Clinical%20Development%20Success%20Rates%202006-2015%20-%20BIO,%20Biomedtracker,%20Amplion%202016.pdf.

Purdue Pharma paid $80.5 million to MRL for R&D services, including $7.3 million for markups.[34] Based on my analysis of the profitability of comparable research service providers, the 10% markup paid to MRL is consistent with an arm's-length payment for these services.

Figure 4: Other transfers: R&D ($ in millions)

Transaction	Payments from	Payments to	Transaction amount	Transfer value	Net differential to Purdue Pharma
A. EDO Costs plus 10% for research services, 2013–2019	Purdue Pharma	EDO	$32	$32	$0 (Markup ok)
B. MRL Costs plus 10% for research services, 2008–2019	Purdue Pharma	MRL	$81	$81	$0 (Markup ok)

V.D.2. Finished product transfers

(78) I evaluated four transfers related to purchases of finished products between Purdue or Rhodes (part of the Debtor Group) and the IACs. These include:

- Purdue Pharma's purchasing services agreement with PPTI;
- IAC payments to Purdue Pharma for finished products;
- IAC payments to Rhodes Pharma for finished products for the Latin America, Asia Pacific, and Middle East/Africa ("LAM") Region; and
- Rhodes Pharma payments to Mundipharma Labs.

(79) Purdue Pharma entered into two transactions related to finished products with PPTI and IACs, in which Purdue Pharma paid costs plus a markup.[35] I conclude that the markups in these transactions were reasonable, and that Purdue Pharma was not disadvantaged by the terms. I also evaluated the two transactions between Rhodes Pharma (part of the Debtor Group) and the IACs and Mundipharma Labs. In these two transactions, Rhodes Pharma paid or received cost plus markups, and I concluded that these markups were reasonable based on my analysis of the markups earned by comparable companies.

[34] In my Oxycontin royalty analysis, I have assumed that 50% of these R&D payments were for the development and launch of OxyContin in the ex-US markets.

[35] Pharmaceutical products undergo various stages of production, starting with the derivation or manufacturing of the Active Pharmaceutical Ingredient ("API"). The API is then put into the appropriate form and strength and then packaged in what is often collectively referred to as the "Finish and Fill" process.

(80) Figure 5 summarizes the transaction amount, transfer value, and any net differential to Purdue Pharma in these transactions.

V.D.2.a. PPTI purchasing services agreement

(81) On January 1, 2008, Purdue Pharma entered into a purchasing services agreement with PPTI. From 2008 to 2017, Purdue Pharma paid $182 million to PPTI for finished products purchased from third parties on behalf of Purdue Pharma. Examples of such finished product purchases include Butrans, Betadine, and Senokot. It is my understanding that this agreement ended in 2017. Pursuant to the purchasing services agreement, Purdue Pharma paid PPTI for its costs plus a 5% markup. The markup of 5% on cost is reasonable based on an analysis of the markups earned by comparable companies in unrelated party transactions.

V.D.2.b. IACs payments to Purdue Pharma for finished products

(82) Between 2008 and September 15, 2019, various foreign IACs (*e.g.*, Purdue Pharma Canada and Munipharma Labs) purchased $57 million of finished products from Purdue Pharma, including $51 million from Mundipharma Labs. These sales were not governed by written manufacturing supply agreements. The sales of these finished products (*e.g.*, OxyContin, Senokot, Colace, Dilaudid, MS Contin, etc.) were priced at cost plus a 15% markup from 2011 to 2015 and cost plus a 10% markup from 2016 to 2019. For instance, foreign IACs and PPI paid $40.9 million to Purdue Pharma for OxyContin finished dosage products during 2008 to 2016.[36] In these transactions, Purdue Pharma was not disadvantaged, as the markups it received during 2011–2019 (10% and 15%) were greater than the markups earned by comparable companies in unrelated party transactions.

V.D.2.c. Foreign IAC payments to Rhodes Pharma for LAM region finished products

(83) In 2016 and 2017, Rhodes Pharma provided finished dosage products to Mundipharma's LAM regions. Mundipharma Near East GMBH paid $35,961 to Rhodes Pharma in 2016 for these products. These transactions were not governed by any written agreements. The finished dosage products (Oxycodone/APAP tablets) were sold at cost plus a 22% markup. Rhodes Pharma was not disadvantaged, as the markup received (22%) was greater than the markups earned by comparable companies in unrelated party transactions.

V.D.2.d. Rhodes Pharma payments to Mundipharma Labs

(84) On October 1, 2011, Rhodes Pharma entered into a supply agreement with Mundipharma Labs for theophylline. From October 1, 2011 to September 15, 2019, Rhodes Pharma paid $5.3 million to Mundipharma Labs for theophylline products (which are often used to treat lung diseases). Rhodes

[36] The OxyContin finished dosages payments represented 2.4% of the IACs costs of goods for OxyContin during the same period. *See* Foreign Sales 2008 – 2018 (NC02), IACS_0001705300, and Malta_Network Model 09.11 0818 vSent

Pharma agreed to pay listed prices subject to periodic negotiated adjustments. It is unclear whether or not there was a markup paid for these products. However, given the transaction size and purchase volume, the potential net differential to Rhodes Pharma (which is part of the Debtor Group) would be minimal, in the event that any markups paid by Rhodes Pharma were in excess of arm's-length amounts.

Figure 5: Other transfers: Finished products ($ in millions)

Transaction	Payments from	Payments to	Transaction amount	Transfer value	Net differential to Purdue Pharma
A. PPTI purchasing services agreement Costs plus 5% for finished products, 2008–2017	Purdue Pharma	PPTI	$182	$182	$0 (Markup ok)
B. IACs payments to Purdue Pharma Payments plus markups (2011-2015: 15%, 2016-2019: 10%) for finished dosage of OxyContin and MS Contin during 2008–2019	IACs	Purdue Pharma	$57	$57	$0 (Markup ok)
C. Foreign IAC payments to Rhodes Pharma for LAM region finished products Payments for oxycodone products plus 22% markup in 2016	IACs	Rhodes Pharma	$0.04	No underpayment	No loss of value
D. Rhodes Pharma payments to Mundipharma Labs Payments for theophylline tablets in 2011-2019	Rhodes Pharma	Mundipharma Labs	$5.3	$5.3	$0

V.D.3. Manufacturing transfers

(85) Purdue Pharma entered into three manufacturing related agreements. These agreements were with:

- P.F. Laboratories ("PF Labs);
- Mundipharma International Limited (USA) ("MIL USA") and Mundipharma International Technical Operations Limited ("MITOL"); and
- Purdue Pharma Canada.

(86) Based on the analysis of comparable companies providing similar services described in Section IV.A.4, I conclude that the markups in these three transactions were reasonable, and that Purdue Pharma was not disadvantaged. In the pharmaceutical industry, it is common to rely on contract manufacturing organizations for both clinical and commercial stage manufacturing. This allows pharmaceutical companies to focus on drug discovery and commercialization. Purdue Pharma also entered into a manufacturing services agreement with Rhodes Pharma (part of the Debtor Group.)

Similarly, based on an analysis of these comparables, I conclude that the markup on variable costs in this transaction was reasonable as well.

(87) Figure 6 summarizes the transaction amount, transfer value, and any net differential to Purdue Pharma in these transactions.

V.D.3.a. Payments to PF Labs

(88) Purdue Pharma and PF Labs entered into a contract manufacturing agreement on January 1, 1996. This agreement specified a 10% mark up on costs. From 2008 to 2014, Purdue Pharma paid $18.7 million to PF Labs under the contract manufacturing agreement for MS Contin. The 10% markup is a reasonable markup on costs based on an analysis of comparable companies providing similar services.

V.D.3.b. Payments to MIL USA and MITOL

(89) Purdue Pharma entered into a manufacturing services support agreement with MIL USA on January 1, 2014. Pursuant to this agreement, Purdue Pharma paid costs plus a 10% markup for MIL USA to streamline the supply chain of Sackler-owned entities engaged in the sales of pharmaceutical products, and to evaluate opportunities to reduce supply chain costs by insourcing or outsourcing products across the available IAC global supply chain. For example, consolidating active pharmaceutical ingredient purchasing across the Sackler-owned entities could reduce costs by increasing their combined purchasing power. Payments for these support services totaled $5.5 million between January 2016 and September 15, 2019. MITOL was created in 2018 to take over MIL USA's role. Purdue Pharma entered into a similar service agreement with MITOL on August 3, 2018 and has since paid $2.4 million to MITOL for manufacturing support services. In total, Purdue Pharma paid $7.9 million to MIL USA and MITOL from January 2016 to September 2019. The average markup that Purdue Pharma paid to MIL USA is 6.0%, and the average markup that Purdue Pharma paid to MITOL is 5.0%. The overall average markup is 5.7%. Purdue Pharma was not disadvantaged because the average markup is lower than the interquartile of the arm's-length markups on the costs of service charged by third-party Contract Manufacturing Organizations ("CMOs"). This is consistent with the limited manufacturing support roles of both MIL USA and MITOL.

V.D.3.c. Purdue Pharma and PPTI payments to Purdue Pharma Canada

(90) On September 1, 2009, Purdue Pharma entered into a supply agreement with Purdue Pharma Canada for Purdue Pharma Canada to manufacture and package certain pharmaceutical products. Purdue Pharma agreed to pay Purdue Pharma Canada the listed prices subject to annual adjustments. Purdue Pharma does not have information about whether a markup was charged on these products purchased from Purdue Pharma Canada. This agreement was amended four times on November 18, 2013; December 31, 2014; December 31, 2016; and September 10, 2018. Under this agreement, Purdue

Pharma paid Purdue Pharma Canada $41.1 million from September 1, 2009 to September 15, 2019. Avrio Health L.P., a subsidiary of Purdue Pharma, paid Purdue $9.9 million, and PPTI paid the remaining $31.2 million. Any potential net differential to Purdue Pharma, if markups paid were above an arm's-length amount, likely would be relatively limited, as markups charged are generally in the 10% range, consistent with market benchmarks.

V.D.3.d. Rhodes Pharma payments to Purdue Pharma

(91) Purdue Pharma and Rhodes Pharma (part of the Debtor Group) entered into a contract manufacturing agreement on October 18, 2010 for Purdue Pharma to provide CMO services. Under this agreement, Purdue Pharma charged for its costs plus a 10% markup on its variable costs and 50% of fixed costs prior to 2017. From 2017 forward, Purdue Pharma charged variable costs and 1 cent per tablet for fixed costs. Rhodes paid Purdue Pharma $291 million for CMO services from January 1, 2011 to September 15, 2019. The 10% markup on variable costs prior to 2017 is reasonable based on an analysis of comparable companies providing similar services. However, Purdue Pharma potentially undercharged Rhodes Pharma for fixed costs. It is my understanding that Purdue Pharma set the transfer price based on comparable market prices, according to discussions with Purdue Pharma employees in the supply chain function. This does not represent a loss of value since the transfer occurred between two parties within the Debtor Group.

Figure 6: Other transfers: Manufacturing ($ in millions)

Transaction	Payments from	Payments to	Transaction amount	Transfer value	Net differential to Purdue Pharma
A. Purdue Pharma payments to PF Labs Payments for costs plus 10% of manufacturing services during 2008–2014	Purdue Pharma	PF Labs	$19	$19	$0 (Markup ok)
B. Purdue Pharma payments to MIL USA and MITOL Payments for costs plus 10% of manufacturing services during 2016–2019	Purdue Pharma	MIL USA & MITOL	$7.9	$7.9	$0 (Markup ok)
C. Purdue Pharma payments to Purdue Pharma Canada Payments for manufacturing and packing services during 2009-2019	Purdue Pharma	Purdue Pharma Canada	$41.1	$41.1	$0
D. Rhodes Pharma payments to Purdue Pharma Payments for manufacturing services during 2011–2019	Rhodes Pharma	Purdue Pharma	$291	$291	$0 Within Debtor

V.D.4. API transfers

(92) I evaluated two related party API sales transactions by Rhodes Tech. These were:

- Purdue Pharma payments to Rhodes Tech for API; and
- IAC payments to Rhodes Tech for API.

(93) Purdue Pharma entered into an API purchase arrangement with Rhodes Tech (part of the Debtor Group) from 2008 through September 15, 2019. In this transaction, Purdue Pharma paid what appears to be above arm's-length prices for the API. Rhodes Tech also supplied IACs with API, and appears to have received above arm's-length prices for these API sales as well.

(94) Drug R&D and manufacturing are two different business functions within the pharma industry. API production has a high regulatory burden, and this is particularly true for opioid production. In the U.S., the U.S. Drug Enforcement and Administration ("DEA) sets quotas for oxycodone production, as it is a Schedule II narcotic listed in the Controlled Substances Act.[37] API production is unrelated to new molecular entity development. It may make economic sense for separate entities specialized in these functions to be responsible for them. For instance, branded manufacturers often purchase API from a subsidiary or outside manufacturer.[38]

(95) Figure 7 summarizes the transaction amount, transfer value, and any net differential to Purdue Pharma in these transactions.

V.D.4.a. Purdue Pharma payments to Rhodes Tech for API

(96) Purdue Pharma paid Rhodes Tech (part of the Debtor Group) $644 million for API purchases from 2008 to September 15, 2019. Purdue Pharma paid what appears to be an above arm's-length price for these purchases from Rhodes Tech under this arrangement. Purdue Pharma paid $181 million more than the prices charged by [redacted] a third party supplier, during 2008–2019 for Oxycodone API. However, there may have been valid strategic or commercial reasons for these excess payments.

(97) First, Rhodes Tech appears to have developed a specific process to produce the OxyContin "low ABUK" API.[39] ABUK is considered an impurity with FDA-mandated limits and low ABUK

[37] *See* DEA, "Aggregate Production Quota History for Selected Substances, (2011–2021)," Dec. 9, 2020, available at https://www.deadiversion.usdoj.gov/quotas/index.html.

[38] The examples include Novartis and Pfizer purchasing API from Roche and Pfizer-PfizerCentreOne respectively. However, the negotiated API price generally are not disclosed. *See* Novartis, "Novartis signs initial agreement to reserve capacity and implement the technology transfer for the production of the active pharmaceutical ingredient for Roche's Actemra/RoActemra®," April 15, 2021, available at https://www.novartis.com/news/media-releases/novartis-signs-initial-agreement-reserve-capacity-and-implement-technology-transfer-production-active-pharmaceutical-ingredient-roche%27s-actemraroactemra; Pfizer CentreOne, "Pfizer CentreOne specializes in small molecule API manufacturing," available at https://www.pfizercentreone.com/small-molecule-api-manufacturing.

[39] ABUK stands for an α,β-unsaturated ketone. See, for example, US8703950B2, available at

oxycodone is more costly to produce.[40] Second, Purdue Pharma benefited from the security of having a dedicated related party supplier of Oxycodone API under this arrangement. Third, the higher prices charged by Rhodes Tech relative to [redacted] appear to largely reflect the recovery of Rhodes Tech's higher costs (including its fixed costs), based on discussions with Purdue Pharma employees in the supply chain function. Finally, Purdue Pharma purchased API from [redacted] in order to have an alternative provider in the event of supply disruptions at Rhodes Tech, based on discussions with Purdue Pharma's supply chain executives, and thus it is unclear the extent to which Purdue Pharma could have fully consolidated its API purchases with [redacted] Rhodes Tech became part of the Debtor Group at the time of the bankruptcy filing. As such, this does not represent a loss of value since the transfer occurred between two parties within the Debtor Group.

V.D.4.b. IACs payments to Rhodes Tech for API

(98) From 2008 to September 15, 2019, IACs including Bard Pharmaceuticals Limited ("Bard," a subsidiary of Napp) paid $141 million to Rhodes Tech (part of the Debtor Group) for API. Specifically, Bard paid Rhodes Tech $129 million for oxycodone hydrochloride from 2008 through September 15, 2019 and naloxone HCI dihydrate from 2016 to 2017. Bard may have paid Rhodes Tech $19 million more than if it had procured the API from an alternative supplier, [redacted] which offered substantially lower cost oxycodone than Rhodes Tech. Therefore, Rhodes Tech (part of the Debtor Group) was not disadvantaged by this transaction.

Figure 7: Other transactions: API ($ in millions)

Transaction	Payments from	Payments to	Transaction amount	Transfer value	Net differential to Purdue Pharma
A. Purdue Pharma payments to Rhodes Tech Payments for API (*e.g.,* oxycodone, hydrocodone) during 2008–2019 Additional value retained by Rhodes	Purdue Pharma	Rhodes Tech	$644	$463	No loss of value as transfer within Debtor
B. IAC payments to Rhodes Tech Payments for API (*e.g.*, oxycodone hydrochloride) during 2008–2019	IACs	Rhodes Tech	$141	$122	($19)

V.D.5. Administrative services

(99) Some of the other related party transactions include payments or receipts for administrative services. Purdue Pharma made payments from 2008 through September 15, 2019 to IACs for other administrative services as follows:

https://patents.google.com/patent/US8703950B2/en.

[40] Based on communication with Purdue Pharma personnel.

- PPTI for security, EHS, and internal audit services;
- TXP Services, Inc. ("TXP") for financial and tax services; and
- Mundi International Limited (UK) for director consulting and legal services.

(100) During this period, Purdue Pharma also received payments from the IACs and Rhodes Pharma as follows:

- IACs for accounting and HR services; and
- Rhodes Pharma for IT, benefit, distribution, and development services.

(101) Following the methodology described in Section IV.A.4, my evaluation suggests that the costs and markups charged for these transactions were generally consistent with arm's-length prices.

(102) Figure 8 summarizes the transaction amount, transfer value, and any net differential to Purdue Pharma in these transactions.

V.D.5.a. Security, EHS, and internal audit services provided by PPTI

(103) Between 2008 and December 15, 2015, Purdue Pharma paid PPTI $100.1 million. These payments include $56.6 million for security services, $38.5 million for EHS services, and $5 million for internal auditing. Purdue Pharma paid costs and expenses incurred by PPTI plus a markup of 10%. A comparables-based analysis using similar transactions suggests that the 10% markup for EHS and internal audit services is reasonable. However, Purdue Pharma paid PPTI a higher than arm's-length markup for security services and outsourced services, with the total excess markup being $4.8 million between 2008 and 2015.

V.D.5.b. Financial and tax services provided by TXP

(104) Between 2008 and September 15, 2019, Purdue Pharma paid $20.0 million to TXP under a tax services agreement. Pursuant to this agreement, TXP performed accounting, tax-related, and administrative services for Purdue Pharma and various IACs. From January 2008 through July 2018, the agreement's payment structure included costs and expenses, plus a 10% markup. From July 2018 onward, the payment structure was revised to a fixed-fee arrangement. TXP's markup of 10% is reasonable based on an analysis of comparable companies providing similar services.

V.D.5.c. Various services provided to IACs for accounting, HR, and other services

(105) Purdue Pharma provided accounting, HR, and other services to certain IACs. No amounts were charged to any of these entities for the services provided by Purdue Pharma. It is my understanding, based on discussions with AlixPartners, that these services were not material in nature (less than $1 million per year) and were provided under limited circumstances.

V.D.5.d. Various services provided by Mundipharma International Limited (UK) to Purdue Pharma

(106) From 2012 to 2018, Purdue Pharma paid Mundipharma International Limited (UK) $4.5 million for consulting and legal services. Based on the available materials and interviews with Purdue Pharma, I have not been able to identify a business need and what specific services, if any, were actually provided to Purdue Pharma under this agreement. Absent additional information regarding the commercial benefits, if any, received by Purdue Pharma from these payments, this represents a transfer of $4.5 million from Purdue Pharma without any corresponding value received in return.

V.D.5.e. Admin services provided to Rhodes

(107) From 2008 to September 15, 2019, Rhodes Tech and Rhodes Pharma (both part of the Debtor Group) paid Purdue Pharma a total of $56.6 million for shared services and expenses. The services provided include IT and benefit plan administration, as well as Rhodes-specific services, such as commercial products manufacturing, distribution, and R&D. It is my understanding, based on discussions with Purdue Pharma employees in the finance function and other finance professionals within the Debtor Group, that Purdue Pharma received payments from Rhodes Tech and Rhodes Pharma after negotiating the cost allocations.

Figure 8: Other transfers: Administrative services ($ in millions)

Transaction	Payments from	Payments to	Transaction amount	Transfer value	Net differential to Purdue Pharma
A. Security, EHS, and internal audit 2008–2019	Purdue Pharma	PPTI	$100	$95	$5
B. Financial and tax 2008–2019	Purdue Pharma	TXP	$20	$20	$0 (Markup at market)
C. Accounting, HR & similar 2008–2019	IACs	Purdue Pharma	$0	$0	Not applicable
D. Director consulting & legal 2012–2018	Purdue Pharma	Mundi International Limited (UK)	$5	$0	$5
E. IT, benefit, distribution, & development 2008–2019	Rhodes	Purdue Pharma	$57	$57	$0 Within Debtor

V.D.6. Office space

(108) Other transactions include two agreements for office space and one agreement for a long-term loan for real estate. These were as follows:

- Terramar Foundation ("Terramar") for office space;
- One Stamford Realty ("OSR") for office space; and
- An E.R.G. Realty ("ERG") loan repayment.

(109) Purdue Pharma had agreements with Terramar and OSR for office space and provided ERG with a long-term loan. Based on my evaluation following the methodology described in Section IV.A.4, Purdue Pharma was not disadvantaged by the lease or loan terms in its transactions with OSR and ERG, respectively. However, based on Purdue Pharma's very limited use of the Terramar office space, Purdue Pharma appears to have overpaid Terramar by $22 million. Figure 9 summarizes the transaction amount, transfer value, and any net differential to Purdue Pharma in these transactions.

V.D.6.a. Purdue Pharma payments to Terramar for office space

(110) On April 13, 1998, Purdue Pharma entered into a service agreement with Terramar for office space in New York City. Pursuant to this agreement, Purdue Pharma paid Terramar a total of $22 million (between $1.5 and $2.5 million per year) from 2008 to 2018. These payments included a service fee equal to all costs plus 10%. The service agreement was terminated on July 1, 2018. Based on a review of the available materials, it does not appear that Purdue Pharma benefited from the vast majority of these payments. Consequently, the amount of the overpayment by Purdue Pharma is approximately $22 million.

V.D.6.b. Purdue Pharma payments to OSR for office space

(111) On April 6, 2006, Purdue Pharma entered into a lease agreement with OSR for office space at One Stamford Forum in Stamford, CT ("OSF"). From 2008 to September 15, 2019, Purdue Pharma paid OSR a total of $105 million for this office space, including $87.1 million for rental payments and $17.9 million for electric, real estate tax, operating expense, and administrative service payments. The lease payments by Purdue Pharma to OSR appear to be comparable to market rates, and the payments were proportionate to the amount of space it occupied. Based on 2006 expected payments, Purdue Pharma occupied approximately 33% of OSF and paid approximately 34% of the total lease and operating costs.

V.D.6.c. ERG loan repayment

(112) On October 1, 2010, Purdue Pharma extended an outstanding $3.35 million loan to ERG (an IAC) through 2020 at a 3.28% interest rate. ERG used the loan to finance renovations to land and buildings in New York City. Purdue Pharma had initially loaned $4.75 million to ERG in 2000 at a 6% interest rate. ERG paid off the loan in 2018. From 2008 to 2018, ERG paid Purdue Pharma a total of $5.1 million, including $1.29 million in interest. The interest paid to Purdue Pharma on this loan is

consistent with arm's-length rates, as reflected in the Internal Revenue Service's long-term Applicable Federal Rate for October 2010.

Figure 9: Other transfers: Office space ($ in millions)

Transaction	Payments from	Payments to	Transaction amount	Transfer value	Net differential to Purdue Pharma
A. Terramar space in New York Lease payments, 2008–2019	Purdue Pharma	Terramar	$22.2	$0	$22.2
B. OSR Lease payments, 2008–2019	Purdue Pharma	OSR	$105	$105	$0 (Lease terms at market)
C. ERG loan repayment 2008–2018	ERG	Purdue Pharma	$5	$5	$0 (Loan terms at market)

VI. Conclusion

(113) Based on the information available to me and the analyses described above, I conclude that 16 of the 37 transactions resulted in payments to Purdue Pharma that were lower than what one would expect if they had been between Purdue Pharma and unrelated third parties. I estimate that the corresponding underpayments to Purdue Pharma and transfers of value to related parties outside the Debtor Group total $1.4 billion between 2008 and September 15, 2019.

David W. DeRamus, PhD

June 15, 2021

Date